UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,668	01/10/2002	J. Mark Steber	PD-201001	8366

7590 06/09/2004

Hughes Electronics Corporation
Patent Docket Administration
Bldg. 1, Mail Stop A109
P.O. Box 956
El Segundo, CA 90245-0956

EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2685	4

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/043,668	STEBER ET AL.
	Examiner	Art Unit
	Blane J Jackson	2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson et al. (U.S. Patent 6,563,891) with a view to Saito et al. (U.S. Patent 5,513,387).

As to claims 1, 3-5, Eriksson teaches an apparatus for providing automatic gain control for use in a satellite terminal of a satellite communication system, the satellite communication system capable of transmitting a plurality of different modes of data (a wireless transceiver, the example of a cellular phone utilizing AGC and several digital transmission methods or modes such as TDMA or CDMA, column 7, lines 35-37), the apparatus comprising:

A demodulator circuit having an analog to digital converter (figure 3, analog to digital converter (70)),

A *first variable amplifier* having a gain value set on the basis of a measured power level of a predetermined data signal,

A *second variable amplifier* having a gain value set on the basis of the mode of data being received by the satellite terminal, each of the data modes having a

corresponding predetermined gain value associated therewith which is utilized as the gain value of the second variable attenuator when the satellite terminal receives the data mode (figure 8, 4a, a mode adaptive AGC system with digital gain controlled IF amplifier (60) with multiple gain stages, each with separate signal gain control where all are to maintain the level of the signal presented to the A/D converter in an optimum range, column 9, lines 28-66; gain value set on the basis of a measured power level, column 1, lines 50-59; additional signal value control of a predetermined data signal termed data modes, figure 8, column 13, line 20 to column 14, line 42; Eriksson teaches a complex system with additional prediction of the mode gain set in addition to a memory table as well as a simple default mode of selected gain and other control values with each change in operating mode.

Eriksson does not teach where the first and second variable amplifiers are variable attenuators.

Saito discloses several embodiments of a gain control circuit for a wireless receiver where two or more front-end stages are individually controlled gain elements, variable attenuators and amplifiers that are controlled based on a measured power level of the data signal (figures 1-8, column 2, line 61 to column 3, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize in the system of Eriksson the alternative gain control stages of Saito to limit the dynamic range of a received signal within the receiver to enable the use of low resolution, low power A/D converters in the receiver.

As to claim 2, Eriksson teaches the apparatus of claim 1 wherein the first variable attenuator and the second variable attenuator are operative for maintaining the input power level to the analog to digital converter within a predetermined range (column 7, lines 35-65 and column 9, lines 28-49).

As to claim 6, Eriksson teaches the apparatus of claim 5 wherein the data mode of the data to be received by the demodulator is known a priori such that the programmable gain amplifier can be programmed to the predetermined attenuation value corresponding to the given data mode prior to the demodulator processing such data (figure 8, a mode adaptive AGC system with parameters from memory coupled to a mode selection controller, column 13, lines 20-37 and column 14, lines 5-30).

As to claims 7-10 and 12-15 Eriksson teaches a method and apparatus for providing automatic gain control for use in a satellite terminal of a satellite communication system, the satellite communication system capable of transmitting a plurality of different modes of data, the method comprising the steps of measuring a power level of a predetermined data signal received by the satellite terminal (a wireless transceiver, the example of a cellular phone utilizing AGC and several digital transmission methods or modes such as TDMA or CDMA, column 7, lines 35-37), the method comprising the steps of:

Measuring a power level of a predetermined data signal received by the satellite terminal (column 9, lines 28-49, column 11, lines 35-67 and a mode adaptive AGC system: column 13, lines 20 to column 14, line 4),

Adjusting a *gain value* of a first variable amplifier on the basis of the measured power level of the predetermined data signal,

Adjusting a *gain value* of a second *variable amplifier* on the basis of the mode of data being received by the satellite terminal, each of the data modes having a corresponding predetermined *gain value* associated therewith which is utilized as the *gain value* of the second *variable amplifier* when the satellite terminal receives the data mode (figure 8, 4a, a mode adaptive AGC system with digital gain controlled IF amplifier (60) of multiple gain stages, each with separate signal gain control, column 9, line 50 to column 10, line 7 and parameters from memory (100) for AGC control coupled to the mode selection controller (101), column 13, lines 20 to column 14, line 42),

Wherein the *first variable amplifier* and *second variable amplifier* are operative for maintaining the input power level to an analog to digital converter contained in a demodulator of the satellite terminal within a predetermined range (column 9, lines 28-49).

Eriksson does not teach where the first and second variable amplifiers are variable attenuators.

Saito discloses several embodiments of a gain control circuit for a wireless receiver where two or more front-end stages are a combination of variable attenuators

or variable amplifier signal control elements that are controlled based on a measured power level of the data signal (figures 1-8, column 2, line 61 to column 3, line 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize in the system of Eriksson the alternative gain control stages of Saito to limit the dynamic range of a received signal within the receiver to enable the use of low resolution, low power A/D converters in the receiver.

As to claims 11 and 16, Eriksson teaches the apparatus of claims 10 and 15 respectively wherein the data mode of the data to be received by the demodulator is known a priori such that the programmable gain amplifier can be programmed to the predetermined attenuation value corresponding to the given data mode prior to the demodulator processing such data (figure 8, a mode adaptive AGC system with parameters from memory coupled to a mode selection controller, column 13, lines 20-37 and column 14, lines 5-30).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Watanabe (U.S. Patent 5,551,072) discloses a reception field detection apparatus, the basis for AGC for a receiver that includes a field intensity detection circuit, a correction value setting circuit, an adder and a first converter. Ou (U.S. Patent 5,862,465) discloses an anti-saturation circuit to control the gain of a variable gain element in the front-end section of a receiver responsive to a desired

signal strength. Zhang (U.S. Patent 6,038,435) discloses an AGC method for a receiver to provide a wide dynamic range and match the signal power of a receive RF signal to an analog to digital converter. Tomoe (U.S. Patent 6,167,244) discloses a receiver system with a high speed convergence of an AGC at a burst signal head for an aperiodic burst signal inherent in a base station. Beamish et al. (U.S. Patent 6,445,732) discloses an AGC circuit based on a receive power estimation to control attenuation or some other form of signal modification prior to the digital circuitry to reduce the required resolution of the analog to digital converter and other receiver components. Yamanaka et al. (U.S. Patent 6,728,524) discloses an automatic gain control circuit for controlling two AGC amplifiers.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600